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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/520,466	01/07/2005	Hirokatsu Hayashi	2005_0004A	5501
513 7590 02/03/2009 WENDEROTH, LIND & PONACK, L.L.P. 2033 K STREET N. W. SUITE 800 WASHINGTON, DC 20006-1021			EXAMINER MARTINEZ, BRITTANY M	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/520,466	Applicant(s) HAYASHI ET AL.	
	Examiner BRITTANY M. MARTINEZ	Art Unit 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 November 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Status of Application

Applicants' arguments/remarks and amendments filed on November 6, 2008, have been carefully considered. **Claims 1-12** are pending in this application, with **Claims 2 and 4-12** amended. **Claims 1-12** have been examined.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in the prior Office action.

1. **Claims 1-8** are rejected under 35 U.S.C. 103(a) as being unpatentable over Kono et al. (US 6,417,264 B1) in view of Hiroshi (JP9142827).
2. With regard to **Claim 1**, Kono discloses an easily dispersible precipitated silica cake, wherein the precipitated silica has a BET specific surface area of 280 m²/g (Kono, c. 7, l. 15; and Example 5) and wherein ion-exchange water is added to the easily dispersible cake to provide an aqueous dispersion of the silica (Kono, c. 7, l. 16-17), said dispersion being stirred with a propeller mixer to affect a preliminary dispersion (Kono, c. 7, l. 17-19), a resultant slurry being treated to be dispersed with a high-pressure homogenizer once (Kono, c. 5, l. 66-67; c. 6, l. 1-3) at a processing pressure of 78 MPa (Kono, c. 5, l. 16-28, 42-48, and 66-67; c. 6, l. 1-3; c. 7, l. 21, 35, and 45; c. 8, l. 54-55), and further diluted to reduce the silica concentration to 1.5% by weight, the

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resultant dispersion having a light-scattering index (n-value) of at least 2 (Kono, "Abstract;" c. 2, l. 18-25; "Table 1;" "Table 2;" Claim 1).

3. With regard to **Claim 2**, Kono discloses an easily dispersible precipitated silica cake, having a water content of 85% by weight (Kono, c. 8, l. 31-59).

4. With regard to **Claim 3**, Kono discloses a process for producing an easily dispersible cake of precipitated silica comprising, using water as an initial reaction liquid (Kono, c. 7, l. 4-5), wherein said process comprises adding sodium silicate and sulfuric acid to water (Kono, c. 7, l. 4-6 and 8-11) of which temperature is being maintained at 95°C (Kono, c. 7, l. 9), whereby forming precipitated silica through their reaction (Kono, c. 7, l. 11); and separating said precipitated silica from said reaction liquid in wet state (Kono, c. 4, l. 42-47; c. 7, l. 11-12; Example 5). Kono does not teach against simultaneous addition of the alkali silicate and mineral acid to the reaction liquid, thus simultaneous addition of the alkali silicate and mineral acid to the reaction liquid would have been obvious to one of ordinary skill in the art and would have been a matter of process design and optimization. Kono further discloses the pH of the reaction liquid being maintained at a neutral pH.

5. With regard to **Claim 4**, Kono discloses a concentration of silica solid in the reaction mixture at the ending time of the reaction of 15wt% (Kono, c. 7, l. 13).

6. With regard to **Claim 5**, Kono discloses a dispersion of precipitated silica which is characterized by being a dispersion of an easily dispersible cake of precipitated silica as described in **Claim 1** in a polar solvent, the average particle size of the precipitated silica particles present in the dispersion being not greater than 200 nm (Kono, c. 2, l. 8-

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11 and 59-67; c. 7, l. 16-17; "Table 1"). Kono further discloses the presence of silica particles with an average particle diameter greater than 200 nm negatively affects the effectiveness of the silica dispersion when used as a raw material for a coating liquid for an ink jet sheet. For instance, this larger average particle diameter negatively affects flatness on the surface of the coated layer and light transmission, resulting in an opaque coated layer with insufficient glossiness, and ultimately, an insufficient optical density (Kono, c. 3, l. 42-50).

7. With regard to **Claim 6**, Kono discloses a dispersion of precipitated silica in which a cationic polymer is dispersed (Kono, "Abstract;" c. 1, l. 6-7; c. 2, l. 8-11 and 52-58).

8. With regard to **Claim 7**, Kono further discloses a process for preparing a dispersion of precipitated silica, in which a silica slurry formed by dispersing a cake of precipitated silica in a polar solvent is subjected to a fine pulverization treatment with a high pressure homogenizer (Kono, c. 4, l. 66-67; c. 5, l. 16-28, 42-48, and 66-67; c. 6, l. 1-3; c. 7, l. 21-24, 35-36, and 45-46; c. 8, l. 54-55).

9. With regard to **Claim 8**, Kono discloses a process for preparing a dispersion of precipitated silica, in which a liquid premixture formed by dispersing a cake of precipitated silica and cationic polymer in a polar solvent is subjected to a fine pulverization treatment with a high pressure homogenizer (Kono, c. 4, l. 66-67; c. 5, l. 16-28, 42-48, and 66-67; c. 6, l. 1-3; c. 7, l. 35-36 and 45-46; c. 8, l. 54-55).

10. Kono does not explicitly disclose a silica concentration of 5% by weight in the aqueous dispersion of silica (**Claim 1**); pH of the reaction mixture maintained at a fixed

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value within a range of 7.5-11.5 (**Claim 3**); a silica solid concentration not higher than 50 g/L (**Claim 4**); or the ratio of aggregated particles having a particle size equaling to or more than 500 nm being not higher than 5% by volume (**Claim 5**).

11. With regard to **Claim 1**, the claim does not require the limitations following "wherein when" in the 4th line of the claim; rather, these limitations are merely circumstantial. Even so, with regard to **Claim 1**, Hiroshi discloses a silica concentration of 5% by weight in the aqueous dispersion of silica (Hiroshi, 0028). Further, with regard to **Claim 1**, the process for producing the composition is held to be obvious, when the reference teaches a product that appears to be the same as, or an obvious variant of, the product set forth in a product-by-process claim although produced by a different process See *In re Marosi*, 710 F.2d 799, 218 USPQ 289 (Fed. Cir. 1983), and *In re Thorpe*, 777 F.2d 695, 227 USPQ 964 (Fed. Cir.1985). See also MPEP 2113.

12. With regard to **Claim 3**, it is well-known in the art that a neutral pH range would overlap the pH range of 7.5-11.5

13. With regard to **Claim 3**, Hiroshi discloses simultaneous addition of the alkali silicate and mineral acid to the reaction liquid (Hiroshi, 0100).

14. With regard to **Claim 4**, in view of *In re Boesch*, the claimed numerical silica concentration limitation is considered to be a result effective variable and therefore may obviously be predetermined and optimized at the time the invention was made by one having ordinary skill in the art.

15. With regard to **Claim 5**, an expected ratio of aggregated particles having a certain particle size is a result effective variable since one of ordinary skill in the art

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would expect different properties in the product as such ratio varies. Since the ratio of aggregated particles having a certain particle size is a result effective variable, it is within the ordinary skill of one of ordinary skill in the art to develop a suitable ratio of aggregated particles having a certain particle size. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

16. Thus, it would have been obvious to one of ordinary skill in the art to modify the products and processes of Kono with the process conditions of Hiroshi in order to obtain an exceptionally stable silica dispersion with a reasonable expectation of success (Hiroshi, 0055).

17. **Claims 9-12** are rejected under 35 U.S.C. 103(a) as being unpatentable over Kono et al. (US 6,417,264 B1) in view of Hiroshi (JP9142827) as applied to **Claim 1** above, and further in view of Ichinose et al. (US 2003/0039808).

18. With regard to **Claim 9**, Kono discloses a raw material for a coating liquid for ink-jet recording sheets (Kono, c. 1, l. 10-12) which is characterized by being obtained by dispersing the easily dispersible cake of precipitated silica of **Claim 1** in a polar solvent (Kono, c. 2, l. 8-11 and 59-67; c. 7, l. 16-17; "Table 1"), and the percent transmission of the raw material for the coating liquid as measured after diluting the same to the silica concentration of 1.5% by weight being at least 20% ("Table 1" and "Table 2").

19. With regard to **Claim 10**, Kono discloses a raw material for a coating liquid for ink-jet recording sheet, which further comprises a cationic polymer (Kono, c. 1, l. 9-12).

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20. With regard to **Claim 11**, Kono discloses a process for making a raw material for a coating liquid for ink-jet recording, which is characterized by dispersing a cake of precipitated silica in a polar solvent (Kono, c. 2, l. 8-11 and 59-67; c. 7, l. 16-17; "Table 1").

21. With regard to **Claim 12**, Kono discloses a process for making a raw material for a coating liquid for ink-jet recording sheet, which is characterized by dispersing a cake of precipitated silica and a cationic polymer in a polar solvent (Kono, c. 4, l. 66-67; c. 5, l. 16-28, 42-48, and 66-67; c. 6, l. 1-3; c. 7, l. 35-36 and 45-46; c. 8, l. 54-55).

22. The aforementioned applied prior art does not explicitly disclose a binder
(Claims 9 and 11-12).

23. Ichinose discloses a coating liquid for ink-jet recording sheets and a process of making, comprising dispersing silica, a binder, and a cationic polymer in a polar solvent (Ichinose, "Abstract;" p. 1, 0002; p. 2, 0025-0026; p. 6, 0059-0060).

24. Thus, it would have been obvious to one of ordinary skill in the art to modify the product and process of the aforementioned applied art with the binder of Ichinose in order to obtain an effective coating liquid for ink-jet recording sheets with a reasonable expectation of success (Ichinose, "Abstract;" p. 1, 0002).

Response to Amendments

Applicants' amendments filed November 6, 2008, with respect to the Claims have been fully considered and are accepted. The objections to the Claims filed June 6, 2008, have been withdrawn.

Response to Arguments

1. Applicants' arguments filed November 6, 2008, with respect to the Claim Rejections of **Claims 1-8** under 35 U.S.C. § 103 over Kono in view of Hiroshi (Applicants' response, 11/6/08, p. 5-10) have been considered but are not persuasive.
2. Acknowledgment is made of Applicants' argument that the precipitated silica cake of Kono is not the easily dispersible precipitated silica cake of the instant application because Hirokatsu Hayashi reproduced Example 5 of Kono and the results (set forth in the Declaration Under 37 CFR 1.132 submitted November 6, 2008) indicate that the cake of precipitated silica of Kono is not easily dispersible since a light scattering index of 1.6 is obtained in Kono's Example 5 when the precipitated silica cake is dispersed in ion-exchange water with the high-pressure homogenizer once (Applicants' response, 11/6/08, p. 7-8); however, this argument is not persuasive. First of all, **Claim 1** does not require the limitations following "wherein when" in the 3rd line of the claim; rather, these limitations are merely circumstantial. Further with regard to **Claim 1**, the process for producing the composition is held to be obvious, when the reference teaches a product that appears to be the same as, or an obvious variant of,

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the product set forth in a product-by-process claim although produced by a different process. See *In re Marosi*, 710 F.2d 799, 218 USPQ 289 (Fed. Cir. 1983), and *In re Thorpe*, 777 F.2d 695, 227 USPQ 964 (Fed. Cir. 1985). See also MPEP 2113. Kono discloses a precipitated silica having a BET specific surface area of $280 \text{ m}^2/\text{g}$ that when diluted to reduce the silica concentration to 1.5% by weight, the resultant dispersion has a light-scattering index (n-value) of at least 2 (2.4) (Kono, Example 5; Table 1), so whether the process of Kono's Example 5 was dispersed with a high-pressure homogenizer once or more is not relevant to this *product* claim since the resulting product of Kono is the same as that of the instant application. In any event, the disclosure of a reference is not limited to its explicit examples; rather, references are looked at in view of their entire disclosure and what that disclosure may reasonably suggest. Kono discloses a wet processed silica that when diluted to reduce the silica concentration to 1.5% by weight, the resultant dispersion has a light-scattering index (n-value) of at least 2 (Kono, "Abstract;" Claim 1), and dispersing of the silica with a high-pressure homogenizer being carried out 1 to 10 times (Kono, c. 5, l. 66-67; c. 6, l. 1-3).

3. Acknowledgment is made of Applicants' argument that the examiner referenced Examples 6-9 in the discussion of light-scattering index, while these examples disclose dry processed silica instead of precipitated silica (Applicants' response, 11/6/08, p. 8). Reference to Examples 6-9 of Kono was made in error. Kono discloses silica dispersions, wherein the silica is selected from the group consisting of wet processed silica and dry processed silica (Kono, Claim 1). Further, Kono discloses a wet processed silica that when diluted to reduce the silica concentration to 1.5% by weight,

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the resultant dispersion has a light-scattering index (n-value) of at least 2 (Kono, "Abstract;" Claim 1), and dispersing of the silica with a high-pressure homogenizer being carried out 1 to 10 times (Kono, c. 5, l. 66-67; c. 6, l. 1-3).

4. Acknowledgment is made of Applicants' argument that Hiroshi does not remedy the supposed aforementioned deficiencies of Kono (Applicants' response, 11/6/08, p. 8); however, Hiroshi was not used to disclose light-scattering index. Hiroshi was used to disclose the silica concentration in the aqueous dispersion of silica and pH of the reaction mixture.

5. Acknowledgment is made of Applicants' argument that Kono does not disclose the reaction temperature maintained at 95°C throughout (Applicants' response, 11/6/08, p. 9). However, Kono discloses the reaction temperature being 95°C (Kono, c. 7, l. 9) and does not disclose temperature fluctuation once this reaction temperature is reached. Kono does not teach against maintenance of the reaction temperature above 90°C, thus maintaining the reaction temperature above 90°C would have been obvious to one of ordinary skill in the art. Even so, if the reaction temperature of Kono was kept at 95°C for a matter of seconds, this would constitute temperature maintenance. Since there is no disclosure of a temperature change after reaching 95°C in Kono, the temperature is inherently maintained. Further, the instant claims do not disclose a minimal temperature maintenance time.

6. Acknowledgment is made of Applicants' argument that Kono does not disclose simultaneous addition of an alkali silicate and mineral acid to the reaction liquid (Applicants' response, 11/6/08, p. 9). Kono does not teach against simultaneous

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addition of the alkali silicate and mineral acid to the reaction liquid, thus simultaneous addition of the alkali silicate and mineral acid to the reaction liquid would have been obvious to one of ordinary skill in the art and would have been a matter of process design and optimization. Further, Hiroshi discloses simultaneous addition of the alkali silicate and mineral acid to the reaction liquid (Hiroshi, 0100).

7. Acknowledgment is made of Applicants' argument that Hiroshi discloses the silica slurry pH being maintained at a value of greater than 8, not the pH of the reaction liquid at the production time of the wet silica (Applicants' response, 11/6/08, p. 9). However, Kono discloses the pH of the reaction liquid being maintained at a neutral pH. It is well-known in the art that a neutral pH range would overlap the pH range of 7.5-11.5.

8. Applicants' arguments filed November 6, 2008, with respect to the Claim Rejections of **Claims 9-12** under 35 U.S.C. § 103 over Kono in view of Hiroshi and Ichinose (Applicants' response, 11/6/08, p. 5-10) have been considered but are not persuasive.

9. Acknowledgment is made of Applicants' argument that Ichinose does not remedy the supposed aforementioned deficiencies of Kono and Hiroshi (Applicants' response, 11/6/08, p. 10); however, Ichinose was not used to disclose the supposed aforementioned deficiencies. Ichinose was used to disclose a binder.

Conclusion

10. **THIS ACTION IS MADE FINAL.** Applicants are reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BRITTANY M. MARTINEZ whose telephone number is (571) 270-3586. The examiner can normally be reached Monday-Friday 9:00AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached at (571) 272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Wayne Langel/
Primary Examiner, Art Unit 1793

BMM

/Brittany M Martinez/
Examiner, Art Unit 1793